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ABSTRACT

A program to reverse the impediments to scientific and technological advancement brought on by the Cultural Revolution in the People's Republic of China is described. The Cultural Revolution impeded progress through the denigration of intellectuals, the closing of schools, and the philosophy that foreign influences were contradictory to the Maoist principle of self-reliance. The report discusses the relevance of educational exchanges to the modernization program, educational developments and change since the death of Zhou Enlai (Chou En' Lai), efforts to improve the image and role of intellectuals, the Cultural Revolution, and the administration of foreign exchange programs. The program calls for advancement in agriculture, industry, science and technology, and defense. It also focuses on development of new sources of energy, computer technology, space science, laser usage, high energy physics, and genetic engineering. To accomplish these goals, Chinese leaders are expanding and modernizing educational facilities and creating an atmosphere conducive to intellectual activity. China has also launched a major effort to send Chinese students abroad for scientific, technological, and language training and to invite foreign specialists to China to lecture, teach, and participate in joint research efforts. (KC)

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THE EDUCATIONAL SYSTEM AND ACADEMIC AND TECHNOLOGICAL EXCHANGES OF THE PEOPLE'S REPUBLIC OF CHINA

RESEARCH REPORT

This report was prepared by

Harald W. Jacobson

East Asia & Pacific Branch

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NOTE

Except for limited additional data, the attached paper was prepared by Harald W. Jacobson (PGM/REA) and presented at the Conference on Communication and China's External Relations held at the East-West Communication Institute of the East-West Center, Honolulu, Hawaii, January 7, 1980.

SUMMARY

The People's Republic of China (PRC) has embarked upon an ambitious modernization program intended to move China into the forefront of the world's industrialized nations by the end of the present century and to achieve significant progress in that direction by 1985. The program, officially termed "the four modernizations," calls for China to attain advanced world levels of the 1970s, or beyond, by the year 2000 in the four fields of agriculture, industry, science and technology, and national defense. Basic to all fields, the PRC has declared, is progress in science and technology. Although the unrealistically ambitious program initially outlined has been cut back as a result of periodic reassessments, the goals remain high. China's ability to approach them will depend heavily on the PRC's success in mobilizing its human and material resources and its efforts to acquire quickly the necessary scientific and technological skills.

China's four modernizations program bears little resemblance to programs commonly associated with most developing countries. While attending to basic elements and principles of development, the PRC program also focuses on highly sophisticated areas of scientific and technological advancement that would contribute to a high level of economic and military progress, such as the development of new sources of energy, computer technology, space science, laser usage, high energy physics, and genetic engineering.

To accomplish these goals, the Chinese leadership seeks to expand and modernize its education facilities, eradicate adverse attitudes toward intellectuals and "things foreign" cultivated during the Cultural Revolution, create an atmosphere conducive to intellectual activity, and develop extensive programs of scientific and technological exchange with advanced countries, particularly with countries of the West and Japan.

During the Cultural Revolution, intellectuals and intellectual pursuits were denigrated. Many of China's intellectuals were persecuted and driven from their normal fields of operation; many were purged. Schools at all levels were closed and reopened only slowly, with colleges and universities reopening only in the 1970s and then with a heavy curriculum concentration on politics. Where they were permitted to function, intellectuals were placed under the administrative control of political cadres, for whom ideology held priority over science. The transfer from abroad of science and technology were held to be in contradiction with the Maoist principle of self-reliance. As a consequence, an intensive effort is being made to eradicate and reverse these and other attitudes that impede scientific and technological progress.

In order to acquire quickly the skills necessary for achievement of the four modernizations, the PRC has launched a major effort to send Chinese students abroad for scientific, technological and language training, and to invite foreign specialists to China to lecture, teach and participate in joint research projects. Thousands of Chinese students have been sent to the United States, West Germany, France, England, Japan and other countries for such training and the numbers can be expected to mount significantly. Earlier policies of strict PRC Embassy control over students in their respective countries have been dropped and Chinese students abroad are widely dispersed and permitted, even encouraged, to reside with private families and integrate with local students.

PRC officials have estimated the need of a corps of 800,000 scientists and technicians for the modernization program, of which only 60,000 were available in 1978. Thus, despite the crash effort to train such specialists, China will remain short of the necessary skilled personnel for a prolonged period of time.

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Introduction

As part of a comprehensive modernization program, the People's Republic of China (PRC) committed itself, in a series of conferences in 1977 and 1978, to an ambitious undertaking intended to advance China in fields of science and technology to world levels of the 1970s (and beyond in some fields) by the year 2000.[1] Significant progress toward this general goal was initially contemplated in a series of specific targets incorporated in an interim program for the period of 1978 and 1985[2] but early recognition that the interim goals were beyond China's capability resulted in progressive readjustment of plans and cutbacks of targets.

From the beginning, the Chinese leadership recognized that the achievement of the goals it had set for itself, the interim as well as the long-term, could not be realized without the transfer from abroad of science and technology, and that the transfer of such could not be successfully accomplished without the training of a massive corps of foreign language specialists. As a consequence, the Chinese leadership has made it clear to the Chinese people and to authorities abroad that it intends to increase vastly and expand scholarly and technological exchanges with advanced countries of the West and Japan. Some scientific and technological exchanges with Moscow-oriented Communist countries of Eastern Europe will also be revived, but exchanges with the Soviet Union will apparently remain dormant.

The comprehensive development program, which calls for modernization in four areas--agriculture, industry, science and technology, and national defense--was initially proposed by Zhou Enlai at the Third National People's Congress (NPC) in 1964 and reintroduced by him at the Fourth NPC in 1975. Although approved by the NPC on each occasion, the initial proposal was frustrated by the Cultural Revolution and the second by the negative attitude of leaders who gained dominant influence within the Party following the death of Zhou in 1976, particularly those leaders now commonly referred to in China as the "Gang of Four," namely, Wang Hungwen, Zhang Qunqiao, Jiang Qing, and Yao Wenyuan, who were all members of the Political Bureau of the Communist Party of China (CCP) before their sudden fall from power in October 1976.

The Cultural Revolution prevented the implementation of the program by its attack on the bureaucracy and the undermining of civil order, and deterred future implementation as a result of a number of developments in the course of its unfolding. These included the emotional emphasis on "red" over "expert," the closing of all educational institutions, a campaign against "things foreign," and the denigration of intellectuals. Though Zhou was able to win reendorsement of the program at the Tenth National Party Congress in 1973 and at the

Fourth NPC in 1975, his declining health and forcefulness enabled the Gang of Four to perpetuate views and attitudes nurtured during the Cultural Revolution and stymie any effort to implement the plan.

According to current CCP allegations, the Gang of Four looked upon some aspects of modernization as counterrevolutionary and on others as threats to basic Maoist principles. They are accused of having opposed the development of foreign trade and the transfer to China of foreign technology, considering advocacy of such policies as a reflection of a "slavish comprador philosophy" and as evidence of a belief that dependence on the Maoist principle of self-reliance commits China to a policy of "trailing behind at a snail's pace." They looked upon efforts to put enterprises on a profitable basis as a policy of "putting profits in command." They are accused of mistrusting intellectuals and slandering them as "the stinking ninth category,"[3] as "spreading bourgeois poison," and as the "foundation of capitalist restoration." Science and technology, they said, was dominated by a "revisionist line." They allegedly argued that "the more knowledge, the more reactionary," and expressed a clear preference for "laborers with no culture." Modernization, they said, was in fact reversion to capitalism.

The modernization program was reaffirmed as a national project, after the fall of the Gang of Four, at the Eleventh National Party Congress in August 1977 and the Fifth NPC in March 1978. Revival and implementation of the program can be attributed directly to the efforts and forceful leadership of Deng Xiaoping, following his restoration to power in August 1977 as Vice Chairman of the CCP and Vice Premier of the State Council, his second rehabilitation after periods of disgrace from 1967 to 1973 and 1976 to 1977.

Relevance of Exchanges to PRC Modernization Efforts

Policies and attitudes that prevailed during the decade from 1966 to 1976, Chinese Communist leaders say today, set China back 20 years or more in the fields of science and technology. Vice Premier Fang Yi, the leading official in the fields of science and technology,[4] told a National Science Conference, meeting in Peking in April 1978, that China had approached world levels in some fields of science prior to the Cultural Revolution but, because of setbacks during that period and subsequently, the country is now 15 to 20 years behind advanced world levels in many branches of science and technology and still more in some. Deng Xiaoping told the same assembly that China had "lost a lot of time," particularly "as a result of the sabotage of Lin Biao and the Gang of Four." To achieve the objectives of the modernization program to which the PRC is committed, Deng and other leaders have said that China must urgently recover lost ground in these fields, and to do so it must

immediatsly reverse certain popular attitudes, adopt a number of institutional and administrative changes, and rapidly develop and expand scientific and technological exchanges with advanced countries of the West and Japan. Among the attitudes that must be corrected or reversed are those concerning education, intellectuals, things foreign and the transfer of technology, all of which are germane to the development and expansion of exchanges.

In his report to the Fifth NPC on the work of the government, Hua Guofeng declared that the fall of the Gang of Four marked the conclusion of the Cultural Revolution and the inauguration of a "new period" of development in China's "socialist revolution and socialist construction." During the Cultural Revolution, Deng told the science conference, the CCP "concentrated maximum efforts" on the political revolution; today, he said, it must "take firm hold" of the work of modernization. "The New Period" has become the common designation for the period of development upon which the PRC has embarked, and the modernization project is being referred to increasingly as a "New Long March."

As noted above, the modernization program calls for the transformation of China into a powerful, modern socialist country by the end of this century through concentrated development in four fundamental sectors--agriculture, industry, science and technology, and national defense, but "the crux of the four modernizations," Deng said, "is the mastery of modern science and technology."[5]

Accordingly, less than two weeks after the conclusion of the Fifth NPC, a National Science Conference was convened in Beijing, attended by some 6,000 scientific and technical workers and bureaucrats involved in science and technology, at which a general plan for developments in science and technology was outlined. This conference was followed by a series of specialized conferences, all with nationwide representation, at which various sectors of the overall program were developed. The most important of these, in terms of international exchanges, were a national Education Conference (in April), National Capital Construction Conference (May), All-Army Political Work Conference (April to June), National Conference on Finance and Trade (July), National Agricultural Conference (July), the Third Nuclear Physics Conference (August), and the Ninth National Trade Union Congress (October). All in 1978.

At the National Science Conference, Fang Yi listed the following goals for science and technology for the interim period ending in 1985:[6]

1. Approach or attain advanced world levels of the 1970s in a number of important branches of science and technology;

2. Increase in the number of professional research workers to 800,000;[7]

3. Establishment of a number of up-to-date centers for scientific experimentation; and

4. Establishment of a nationwide system for scientific and technological research.

In an elaboration on the general outline, Fang Yi threw light on exchange targets in the field of science and technology that the PRC is likely to seek to develop. The overall long-term plan, Fang said, provides for research and development in 27 "spheres," the most important of which are natural resources, agriculture, industry, national defense, transport and communication, oceanography, environmental protection, medicine, finance and trade, culture and education. Within these spheres, 108 "key projects" have been selected for priority research during the interim period (1978-1985), the completion of which would raise China to advanced world levels of the 1970s in a number of important branches of science and technology and lay the foundation for "catching up with or surpassing world levels in all branches" by the year 2000. While the 108 key projects were not specifically identified in the available text of his speech,[8] the eight "comprehensive spheres" within which they fall were cited. These are:

1. Science and Technology in Agriculture. Agriculture, Fang maintained, is the "foundation of the national economy." Surveys will be taken of China's resources in agriculture, forestry, animal husbandry, sideline production, and fisheries, and research will be carried out in each, including research and development in matters relating to management and tool improvement.

2. Science and Technology of Energy. While coal will remain the chief source of energy in the PRC for a "fairly long time to come," and the development of coal and petroleum technology will continue to receive high priority, including further exploitation and expansion of each, the PRC will take as its "chief research subjects" the "key technical problems in building large hydroelectric power stations and thermal power stations at pit mouths, large power grids and super-high-voltage power transmission lines." Greater efforts will also be devoted to the exploration of new sources of energy, such as atomic power, solar energy, geothermal energy, wind power, tide energy and controlled thermonuclear fusion. Attention will also be paid to "low-calories" fuels, such as bone coal, gangue and oil shale, and marsh gas.

3. Science and Technology Concerning Materials. Fang called attention to the "paramount importance" to the four modernizations

of research in the field of materials. China must master modern metallurgical technology quickly, he said, make full use of its rich natural resources, and increase "at high speed" the production of cement and new types of building materials. Specifically, China "should devote great effort to basic research on the science of materials, develop new experimental techniques and testing methods, and gradually be able to design new materials with specific properties."

4. Electronic Computer Science and Technology. Within the next three years, rapid development in basic research on computer science and related disciplines is planned and by 1985 the PRC aims to acquire "a comparatively advanced" research force in the field and to have built a "fair-sized" modern computer industry.

5. Laser Science and Technology.[9] As a relatively new field of research for the PRC, efforts within the next three years will focus on the study of laser physics, laser spectroscopy, and nonlinear optics, while in the next eight years Fang expects Chinese scientists to "make discoveries and creations" in new types of laser devices, developing new wave-lengths of laser and studying new mechanisms of laser generation.

6. Space Science and Technology. Space science, Fang noted, has application for many aspects of the military and of the national economy, hence the PRC should attach importance to the study of space science, including the study of remote sensing techniques and the application of satellites. Space centers are to be built and the development of China's space vehicle series stepped up.

7. High Energy Physics. A modern high energy physics experimental base is to be built within 10 years, in which a proton accelerator with a capacity of 30,000 to 50,000 million electron volts is to be completed during the first five years and a "giant one" with a still larger capacity in the second five years. Meanwhile earnest effort is to be made to prepare for research in the field, with stress on "studying and manufacturing detectors and training laboratory workers." (PRC research in high energy physics began only in the early 1970s[10]).

8. Genetic Engineering. In this fast developing new branch of study, Fang said, China "must" in the next three years strengthen organization and coordination and step up the tempo of building and improving the related laboratories and conduct basic studies. In the next eight years, these should be combined with studies in molecular genetics and cell biology.

While environmental protection was not one of the eight priority spheres on which Fang elaborated, he raised the subject by quoting Hua Guofeng on multi-purpose utilization:

> "We must attach importance to multi-purpose utilization which makes full use of natural resources and alleviates pollution of the environment. The three industrial wastes (liquids, gasss and dregs) will bring harm if they are discarded but will become treasures if they are turned to good account."

In most of these fields current PRC research capability is limited and in some virtually absent both in terms of adequate facilities and competent research personnel. Pre-1949 Western-trained senior scientists and technicans are decreasing rapidly in number on account of natural and political attrition; some Soviet-trained mid-generation scientists and technicians may be under a political cloud and therefore inactive in their specialized fields of work; while junior scientists and technicians, due to domestic politics and suspended university education, have not been produced in significant numbers. As a result, the supply of scientists and technicians is insufficient to fill either the teaching or research complements required by the modernization programs. Hence the PRC is compelled to rely heavily on training abroad and the employment of foreign teachers in China to meet the staffing needs of both its short- and long-term modernization programs.

At the opening session of the Fifth NPC on February 26, 1979, Premier Hua Guofeng stated that in order to attain the modernization goals China "must build a vast army of working intellectuals." A few weeks later, on March 18, Vice Premier Deng Xiaoping told a national science conference that the PRC "must actively develop international academic exchanges and step up...friendly contacts with scientific circles of other countries." Deng's point was stressed even more emphatically by Fang Yi, who called for the strengthening of scientific and technical cooperation and academic exchanges with other countries. Fang stated:

> "We must strengthen scientific and technical cooperation and academic exchanges with other countries and keep abreast of the results, trends, policies and measures of their scientific and technological research as well as their experience in organization and management. We should actively and systematically enlarge the scope of sending scientific and technical personnel, students and post-graduates abroad to study, receive advanced training, make study tours and take part in international academic conferences and other

> academic activities. At the same time, we will also invite foreign scientists, engineering and technical experts to China to give lectures, serve as advisors or join us in scientific research."[11]

Full implementation of an exchange program such as that envisaged by Fang Yi has, however, been encumbered by the shortage of Chinese personnel adequately prepared to participate profitably in the program and by a limitation of research and training facilities in China for the reception of foreign exchangees. To overcome these handicaps, the PRC has introduced educational reforms and initiated an expansion of educational facilities.

Educational Reforms and Developments

Thirty years after the founding of the PRC, an educational journal, Jiaoyu Yanqiu ("Educational Research"), found it necessary to complain that education in China is still faced with "two" fundamental problems: (1) primary education has not yet been made universal nor illiteracy wiped out; and (2) "everywhere there is a shortage of qualified personnel."[12]

In part, the reason for these problems can be attributed to setbacks suffered during the Cultural Revolution caused by the closing of educational institutions, the slow-down in language reform, and the denigration of intellectuals.

All schools, from primary through university, were suspended in the autumn of 1966 and a considerable amount of educational plant was taken over by various governmental enterprises, particularly by the People's Liberation Army (PLA). Primary schools resumed operation approximately one year later. Secondary schools reopened toward the end of the 1960s, but universities remained closed until the early 1970s, when they gradually and partially restored educational activity, with a strong emphasis on political education. Graduate schools, however, were not given serious attention until the summer of 1978, at the same time that the major institutions for Overseas Chinese were reactivated--Jinan University in Canton and the Overseas Chinese University in Quanzhou Municipality in Fujian Province.

An element in the denigration of intellectuals that the Jiaoyu Yanqiu article found to be particularly significant in contributing to the shortage of qualified personnel was the "egalitarianism in the training of personnel,"[13] a principle, it alleged, Lin Biao and the Gang of Four had "pushed" to an "extreme." They are accused of having advocated treating as equals people with more knowledge

and those with less knowledge, those with knowledge and those without knowledge, thus creating the attitude that trying to become a specialist meant "personal strife," embarking on the "road to becoming specialists without socialist consciousness," and seeking to become an "intellectual aristocrat."

In the past three years, however, the PRC has undertaken a number of reforms and sought to reverse certain prevalent negative attitudes that have particular relevance to its scientific and technological development and its international exchange objectives. Actions taken include educational reforms, efforts to raise the morale of intellectuals, administrative changes that will allow more effective utilization of their talents, measures to improve management, a campaign to reverse attitudes toward "things foreign," and the promulgation of a principle to adapt theory to changing conditions as a central element of dogma.

Beginning in late 1976, after the fall of the Gang of Four, educational reforms were gradually and progressively introduced. These included a move towards universal education, reduced concentration on political matters in the curricula, an increased focus on scientific and technical subjects, the restoration of the examination system to select students for college entrance, and the elimination of the mandatory tour of service in the countryside between middle school and college, thus making possible direct entrance into universities from high school for those who qualify.

The move towards universal education and the elimination of illiteracy began with the reduction, in the autumn of 1978, of the age of eligibility for entrance into primary schools from seven to six[14] and the implementation of a plan calling for eight years of general education by 1985 for children in rural areas and ten years for those in cities.[15] These plans provide for at least primary school education for students in rural areas and a minimum of lower middle school training for urban students. Achievement of these objectives should present no serious problem other than in staffing.

With respect to higher education, however, the problems confronting the PRC are greater and more complex. According to Zhou Peiyuan, a senior official with responsibilities in fields of science and technology, China had in 1978 only 60,000 of the 800,000 scientists and technicians it needs for its modernization program.[16] Although part of the deficit can be made up by the proper utilization of personnel already trained but presently misused because of past attitudes toward intellectuals[17] and by others pushed through specialized crash courses, the overwhelming majority must necessarily come from among those yet to be trained in China and abroad. Before the Cultural Revolution China had attained a capacity of producing 200,000 college graduates annually, only a portion of which

specialized in science and technology. The capacity at present appears to be to enroll approximately 275,000 to 300,000 in colleges and universities annually, again in all fields of study.

Some expansion of educational facilities can be achieved fairly quickly and with relatively limited expenditures by the return to the Ministry of Education of educational buildings and land arbitrarily occupied by other enterprises and administrative organs, including the PLA, when schools were closed during the Cultural Revolution.[18] At the request of the Mininstry of Education, the State Council issued an order in September 1978 calling for the evacuation and return to the Ministry of Education of all such facilities by no later than August 31, 1979.[19] While the PLA appears to have turned over most of the property it had occupied within the designated period, it continued to hold substantial facilities at People's University in Beijing, leading to a students' strike on October 10, 1979.[20] The strike was settled two days later when the PLA agreed to yield some but not all buildings and land it still held.[21] Return to the Ministry of Education of all property seized by other activities would provide facilities for nearly 150,000 additional college students.[22]

In 1977, the examination system was restored for the selection of candidates for college entrance and, beginning in 1978, these examinations were standardized nationwide. Prior to that, as a result of tendencies developed during the Cultural Revolution, middle school students were sent to the countryside or to factories for a period of manual labor and exposure to workers and peasants before being considered for selection for college entrance. Candidates for higher education were, at that time, selected by co-workers in factories, on communes, and in other establishments and approved by the Party hierarchy on the basis of political acceptability, work performance, and health, with apparently very little consideration given to educational background and intellectual capacity. While the re-introduction of the examination system met initially with wide resistance, opposition appears largely to have subsided.

The nationwide examination system introduced in 1978, which served also as the pattern for the 1979 examinations, contained tests in eight fields, namely, mathematics, physics, chemistry, politics, history, geography, Chinese language, and one or more foreign languages--English, French, Spanish, Russian, German, Japanese or Arabic.[23] Tests in politics, mathematics, and Chinese language were required of all candidates. Additionally, all candidates were required to take tests in two optional fields and some could select a sixth. Candidates who had studied a foreign language were required to include that language as one of the optional fields.

Over the three-year period that entrance examinations have been given, efforts have been made progressively to lower the age of students entering colleges and universities. In 1977, candidates were to be selected primarily from among the 20 to 30 year age group,[24] mostly from among those under 25, but with some allowance for older applicants because of the loss of opportunity for higher education during the Cultural Revolution. In 1979, the Ministry of Education urged emphasis on admitting students "around 20" years of age, prescribing that students taking the entrance examinations that year should be no older than 25 (born no earlier than September 1, 1954), although some talented, unmarried youths up to 28 (born on or after September 1, 1951), who had outstanding academic achievements and certifications by their respective work units, could qualify.[25] To qualify as candidates, students must meet political and health standards that mark them as "three-good" students--morally, intellectually, and physically.[26]

In 1977, 278,000 candidates of the 5.7 million who had taken the examination were admitted to colleges and universities.[27] In 1978, almost six million took the examination, of whom about 290,000 were selected for post-secondary schooling,[28] while, in 1979, about 270,000 of some 4.6 million candidates qualified for enrollment in the term commencing in September 1979.[29] In August 1979, Vice Minister of Education Gao Yi told a reporter of the Central People's Broadcasting Station in Beijing that, with the addition of the 1979 class, enrollment in institutions of higher learning in China would exceed one million.[30] While selection through the examination system is the rule, there is an exception, namely, the automatic admission to college of the winners of the nationwide mathematics contest held annually.[31]

Persons over the age limit for college entrance and those who fail the examinations are not, however, denied opportunity for further education or skill improvement. For them, central and local governments have established an array of vocational schools, spare-time schools (factory-run and secondary level), standardized courses taught over the radio and television, and provided other means for self-improvement.

In September 1979, the PRC claimed to have in operation 598 colleges and universities, 160,000 middle schools, 900,000 primary schools, and 164,000 kindergartens.[32] In addition, a number of central ministries, the Chinese Academy of Sciences, the Chinese Academy of Social Sciences, and several other academic organizations maintain and supervise training and research in a large number of subordinate schools and institutes. The long-term potential of China in the fields of scientific and technological growth is suggested by the fact that, as of 1978, the enrollment in China's primary schools alone was claimed to be 146,000,000.[33]

Primary and middle school education in China is free, except for the purchase of books and other materials. Those selected for college and university education receive from the state not only a free education but also room and board for the duration and a small stipend to cover incidental expenses. While free education is the principle, in practice, higher education does impose an additional financial burden on parents. An economist at the Zhongshan University in Canton recently estimated that the cost of bringing up a child in China from birth to the age of 16 is about Yuan 6,900 (roughly about $4,500) in urban areas, ¥4,800 (ca $3,100) in townships, and ¥1,600 (ca $1,040) in rural areas.[34] If the child goes to a university, the economist calculated, "a further ¥6,000 ($3,900) must be added."[35]

In revitalizing the educational system, efforts have been and are being made to update and modernize textbooks and educational equipment. Some new teaching materials were to be available for the autumn semester of 1978, including textbooks compiled after studies had been made of science and engineering teaching materials obtained from the United States, United Kingdom, France, the Federal Republic of Germany, and Japan.[36] At the same time, in order to "regulate" political indoctrination under the reformed system, a commission was established in 1978 to compile within a year standard texts to be ready for the 1979 academic year on philosophy, political economy, history of the Chinese Communist Party, and the history of the international communist movement.[37] Commenting on the revised textbooks that had already been introduced, Peking Review, with its own perspective, said, "Political jargon has been done away with."[38]

In developing school curricula, there is a growing recognition among Chinese educators and other leaders that foreign language instruction must be greatly bolstered if China is to be able to absorb foreign technology and to maximize the value of its exchange programs. Liao Chengzhi, a member of the CCP Central Committee and prominent in exchange activities, particularly with Japan, has proposed a 14-year foreign language training program for language specialists, to begin early in primary school and continue through college.[39] Liao recommended that such specialists master two foreign languages, of which he considered English and French to be the most important, and urged that Overseas Chinese and foreigners be invited to improve the quality of instruction and augment China's inadequate foreign language teaching staffs. Liao cited an estimate that had been made to the effect that China needs 50,000 foreign language instructors in primary schools alone.[40] He gave no figure for the need in institutions of higher learning, where the need for instructors with greater command of the languages taught and of contemporary usage is more important. In addition to the problem of a shortage of instructors, reference has been made by the PRC media to an insufficiency of up-to-date teaching materials.[41] Resources of most libraries are said to be not only inadequate but also outdated.

In recognition of these problems, exchange agreements concluded with the United Kingdom, Australia, France, and Japan provide for the supply to the PRC by those countries of teachers in English, French and Japanese. In the case of the United States, provisions for academic exchanges are included in a Sino-US cultural agreement signed in January 1979 during Deng Xiaoping's visit to the United States. Meanwhile, interest in learning foreign languages is being fanned in China, and some languages, including English, French and Japanese, are being taught not only in schools but on radio and television as well.

Efforts to Improve the Image and Role of Intellectuals

Closely related to the educational reforms and developments is the campaign under way to improve the image of intellectuals among the people[42] and to bring them into the mainstream of the modernization program by eradicating the stigma placed upon them, granting them greater authority and responsibility in fields of science and technology, allowing them greater freedom of thought, demanding of them less time for normally required political activity, and improving their living standards. "Gone forever," Deng Xiaoping told the national science conference, are the days when the Gang of Four "could willfully sabotage the cause of science and persecute intellectuals."[43]

To reverse negative attitudes that have developed over the past 15 to 20 years, effort is being made to gain public acceptance of intellectuals as members of the proletariat. In socialist society, Deng told the science conference, "those who labor, whether by hand or by brain, are all working people."[44] A correct "understanding that science and technology belong to the productive forces," he added, "and that brain workers who serve socialism are a part of the working people has a close bearing on the rapid development" of China's scientific undertakings.[45] To gain popular acceptance of this concept, speakers and editorial writers have elaborated on the theme that mental work, like manual work, is productive labor and that mental workers, unless they have alienated themselves by association with exploiting classes or engaged otherwise in anti-social activity, should be considered to be part of the proletariat. Despite these efforts, however, as recently as mid-November 1979, a Shanghai paper still found the problem sufficiently important to devote the entire front page to any article calling attention to the fact that there were still "comrades," influenced by the "ultra-left" trend of thought in respect to intellectuals and by "lingering fears" of one kind or another in regards to them, who do not consider intellectuals as part of the working class.[46] The article called for an early correction of "unjust" and "erroneous" policies toward intellectuals. Another journal, in August, called attention

to the fact that few teachers had been admitted to party membership and advocated party membership for primary and middle school teachers.[47]

Another campaign in progress is aimed at improving the popular imago of intellectuals by reversing the negative image promulgated by the Gang of Four. Among measures taken is a decision transmitted to art and literary circles to include intellectuals among heroes favorably portrayed in literary and art works. Zhou Yang, a rehabilitated pre-Cultural Revolution leader in the field of culture, told the national committee of the China Federation of Literary and Art Circles that, while their "most important task" is to present worker-peasant-soldier heroes in their work, "attention should be paid too, to showing the contribution made by revolutionary intellectuals, especially scientists and educators, who up till now have not been given their due place in literature and art."[48] In line with this policy, short stories and films have now appeared favorably featuring intellectuals and their work.

Concurrent with these measures, the PRC has set about to improve the working atmosphere for intellectuals. This is being done by granting them greater freedom of thought, opportunity for free development of their talents, reducing demands on their time for political activity, matching jobs with skills, instituting managerial reforms that give scientists and technicians substantive and administrative responsibilities in their work units, and by recognizing their accomplishments through the granting of honors and titles and regular promotions to those who merit advancement. Though these are aims, at a science and technology conference, presumably convened sometime in November 1979, speakers were still asking that scientists and other intellectuals be given better living and working conditions and be promoted according to their ability rather than by seniority.[49]

At the Fifth National People's Congress, Premier Hua Guofeng asserted that, to speed up the development of science, education and other cultural undertakings, "full scope" must be given to the abilities of intellectuals.[50] The policy of letting a hundred flowers bloom and a hundred schools of thought contend together, he said, is basic "for making China's science and culture flourish." The same thought was expressed by Yu Qiuli, a Vice Premier and the Minister in Charge of the State Planning Commission, when he advised delegates to the July 1978 National Conference on Finance and Trade that "We must further emancipate our minds and no longer bind ourselves hand and foot."[51]

To guarantee more time for substantive work and reduce the demands for political activity on the part of scientists and technicians, a "principle" of "five-sixths time" has been reinstituted. This principle, attributed to Zhou Enlai[52] but hitherto never effectively enforced, requires that research workers be guaranteed that they can devote at a minimum five-sixths of their time to research

work[53] and therefore be exempt from much political activity. To cloak the principle with authority, it was written into the "circular" on the convocation of the National Science Conference by the Central Committee of the CCP as a regulation.[54] In explaining the principle, Deng Xiaoping told the delegates to the science conference that:

> "We cannot demand that scientists and technicians, or at any rate, the overwhelming majority of them, study a lot of political and theoretical books, participate in numerous social activities and attend many meetings not related to their work."[55]

Not only do PRC leaders recognize that to achieve the goals of modernization scientists and technicians should be freed of much activity unrelated to their functions but that greater attention must be given to the proper employment of persons trained in such specialized fields. Guangming Ribao stated in a July 1978 editorial that the number of scientists and technicians in the country not making use of what they have learned is equivalent to three to four times the total number of graduates from several hundred institutions of learning in one year.[56] The editorial stressed the importance for the modernization drive to match skills with jobs, a theme that has been commented upon periodically by both leaders and the press during the year. The need to modernize managerial techniques has also been stressed, particularly the expanded use of computers in management.[57]

An aspect of administrative reform that has been given some attention is the placement of scientists and technicians in positions of administrative as well as substantive responsibility in scientific and technological organizations and the reduction of the role in these organizations of Party bureaucrats who have no substantive or technical competence. The basic task of scientific research institutes, Deng said, "is to produce scientific results and train competent people.... The important task for our political work today is to make every scientist and technician understand how his work relates to the grand goal of the four modernizations."[58] Commenting on the policy, a senior member of the Chinese Academy of Sciences informed the science conference that the position of chief or deputy chief of an institute and the director or deputy director of a laboratory under the academy must be a scientist.[59] An indication that the policy is being enforced is an announcement in late September 1978 that four scientists and technicians had been elevated to positions of vice minister in the Ministry of Petroleum Industry.[60]

Meanwhile, to raise the scientific consciousness of the people as a whole, a nationwide campaign aimed at popularizing science has been mounted in response to Hua Guofeng's call for an extensive "popularizing" of scientific and cultural knowledge[61] and a circular" to that effect has been issued by the CCP Central Committee.[62]

The Role of International Exchanges in China's Modernization Effort

Among the elements that have impeded educational reform and the general modernization effort has been the negative attitude toward "things foreign" nurtured during the Cultural Revolution, resulting in the denunciation of both trade with foreign countries and accepting ideas and new knowledge from abroad. While the Gang of Four has been charged with fostering these negative attitudes, including the specific accusation that they forbade people to learn from the advanced experiences of other countries,[63] it is well known that Jiang Qing personally enjoyed classical music and Western films, though she and her colleagues may well have opposed extensive development of foreign trade and international scholarly exchanges. Irrespective of responsibility, however, the prevailing attitude that emerged and spread during and after the Cultural Revolution was that borrowing from abroad contravened the Maoist principle of self-reliance.

Since an important link in the implementation of all policies is the vast cadres corps, PRC leaders have tackled with some vigor the problem of reversing these negative attitudes among them. Many cadres, conscious of past policy fluctuations and aware of the bitter experiences of those who energetically carried out policies later denounced, are hesitant to act on policies that deviate radically from those previous lauded as Maoist.

To counter the idea that borrowing from abroad is anti-Maoist, the thesis has been advanced that science and technology are "the common treasure of mankind," that every country has its strengths and weaknesses and each country should draw upon the strengths of others to overcome its own weaknesses and share its own strengths with others. Sharing in this fashion, the argument goes, does not violate the concept of independence or the principle of self-reliance.[64] Mao's own remarks about the desirability of drawing upon the good aspects of foreign cultures are cited as applicable to the more general subject of exchanges of knowledge and experience. While some Chinese leaders, including Hua Guofeng, may have been less enthusiastic initially about hasty modernization and borrowing from abroad, the realization of China's lag in many fields of endeavor gained by Hua and his delegation during their visit to Romania and Yugoslavia in September 1978, appears to have convinced them, as

have foreign visits convinced others, of the need to expedite China's modernization and the importance of extensive borrowing from abroad for this purpose.

Since the spring of 1973, the Chinese people have been reminded time and again by conference speakers and through the media[65] that the goals of modernization cannot be achieved without a vigorous program of scientific and technological exchanges with advanced countries of the world. Somewhat startling, however, in terms of the extent to which the learn from abroad thesis has been carried, is the recommendation of a PRC intellectual that even foreign works on social science, particularly studies dealing with the history and culture of China, deserve to be studied:

> In recent years, foreign scholars have written many works, including reference works and tools, on many areas of social science and especially on the history and culture of China. They are worthy of being studied and used by us. In line with the spirit of the guideline of "Letting a Hundred Schools of Thought Contend," we must create conditions to strengthen international academic and cultural exchanges. This is highly necessary in developing our social sciences and science of history.[66]

Pre-1966 Academic and Technological Exchanges

Prior to the Cultural Revolution, the PRC was involved in a variety of technological and education-oriented activities that might broadly be termed exchanges, although in the true sense of the word not all were exchanges. These included: a) sending Chinese students and technicians abroad for education and training; b) providing programs and facilities in China for students from foreign countries; and c) providing programs and facilities in China for secondary, college, or professional training for ethnic Chinese living abroad, better known as Overseas Chinese.

Precise figures for the number of Chinese students who went abroad for studies during this period are not available, but it is known that the overwhelming number of those who did so went to the Soviet Union and to countries in Eastern Europe. The PRC had negotiated various exchange agreements with each of those countries in the 1950s.[67] In a report to the National People's Congress in 1957,

Zhou En-lai stated that during the preceding seven years the PRC had sent 7,000 students to the Soviet Union and Eastern Europe, 90 per cent of whom had gone to the USSR.[68] Five years later, in February 1962, Mikhail Suslov informed a plenum of the Communist Party of the USSR that 11,000 Chinese students had completed their courses of study in Russian institutions of "higher learning."[69] Another source has calculated that between 1949 and 1960, a total of 38,000 Chinese students and trainees, at all levels, had received full or partial training in the Soviet Union.

While most of the students sent abroad during this period went to European Communist countries, a sprinkling had attended institutions in Great Britain, France, Japan, and, before the outbreak of border hostilities in 1962, in India. A few had even found their ways to institutions in one or another African country.

A large portion of those sent to the Communist countries were concerned with scientific and technological studies, while most of those sent to Western Europe and Japan were interested primarily in learning the language of their host countries. The students who went abroad during this period developed study habits and living practices that were to characterize the behavior of Chinese students sent abroad by the PRC until very recently. They were diligent and conscientious in their work but kept largely to themselves and even in "fraternal" countries refrained from mixing with local students. In all countries they were kept under close surveillance by members of the PRC Embassy in the country concerned.

Except for the Overseas Chinese who went to the PRC for their studies and possibly students from Asian Communist countries (about whom virtually no information is available), the number of foreign students who went to China prior to the Cultural Revolution never approached that of the Chinese students who went abroad. The total number probably did not exceed two or three thousand in the 16-year period.

Of the foreign students in China, the largest number of European students came from Communist countries, all of whom went to China under provisions of the student exchange or general cultural cooperation agreements. Considerably smaller numbers came from Western Europe. Asian non-Communist countries were represented by students from Cambodia, India, Indonesia, Sri Lanka, and a few other countries. Education in the PRC appealed at this time especially to certain student groups in India and Indonesia, where arrangements for their schooling were often made by the bi-national friendship associations.

After the Bandung Conference of Asian and African Countries in 1955, at which Chinese leaders first established direct personal contacts with leaders of African states, and particularly after the Suez crisis in July 1956, when the PRC saw a potential role for itself in Africa apart from that as a member of the Communist fraternity of states, special appeals were made to attract African students to China. Those who responded included both leftist sympathizers and non-sympathizers who accepted Chinese scholarships, many of them having been passed over in the selection for scholarships to European Communist and non-Communist countries. The latter expected to receive in China standard professional training that would prepare them for future service in their homelands. While a few African students had arrived in China before the end of the 1950s, the greater number took advantage of the PRC offers in the early 1960s.

The PRC provided African students with transportation to and from China, scholarships that included tuition and lodging, and monthly stipends sufficient to cover the cost of board, books, and incidental expenses. Political sympathizers among them were relatively happy with the programs offered, but those who went primarily for professional training were, for the most part, soon disenchanted with both education and life in the PRC. Disenchantment stemmed from: a) the heavy political content of the teaching at the cost of general education and professional training; b) the difficulty of the Chinese language, which all students had to study before being transferred to institutions dealing with their particular interests; c) the poor educational standards that they found in China; d) constant surveillance and lack of social life that they experienced; e) hostility of the Chinese students, resulting in part from the vast difference in the living standards offered foreign students as compared to that of Chinese students in the same institutions, and f) cases of discrimination that they encountered both of racial and paternalistic nature.[70]

Overseas Chinese began to go to the PRC in large numbers for secondary, college, and professional education after 1955, when the PRC implemented its nationality policy which offered persons of Chinese origin living abroad the option to choose between Chinese citizenship and the nationality of the country in which they were resident. The promulgation of this policy and the establishment of schools in China specifically for Overseas Chinese opened the way for student migration in masses to China. The most important of these institutions were two of university level--Jinan University in Canton, and the Overseas University in Quanzhou in Fujian Province. The attraction of an education in China for Overseas Chinese was further enhanced by the emerging image of the PRC as a successful developing country and as a country playing an increasingly important role in

the international arena. According to the PRC, some 40,000 students from Chinese communities abroad went to the PRC between 1955 and 1958 for their education.[71] The flow continued, and by 1960, the PRC claimed the presence in China of Overseas Chinese students from 30 different countries,[72] while by 1965, some 60,000 to 80,000 such students are variously estimated to have been enrolled in PRC educational institutions.[73]

Many foreign students, Overseas Chinese as well as others, remained in China after completion of their studies and accepted employment in various government agencies. A few, not ethnically Chinese, were employed as foreign language experts and placed with Radio Peking or with one of the PRC publications issued in several foreign languages for audiences abroad. The Overseas Chinese were eventually treated much as the local populace and placed where their skills were needed.

The Cultural Revolution

All programs for foreign students in China were abruptly terminated in the autumn of 1966 when, as a result of student involvement in the Cultural Revolution, all educational institutions from primary through university levels, including those established for Overseas Chinese, were summarily closed. Foreign students were informed that their studies were to be "suspended" for one year, while governments with which the PRC had student exchange agreements were notified of the action and told that consideration would be given to the issuance of certificates of graduation to foreign college students in their senior year.

Except for the very few foreign students who chose to participate with their fellow Chinese in Cultural Revolution activity, most foreign students promptly returned home.

The Chinese action provoked angry responses from Moscow and from the capitals of several East European countries, where, in reciprocity, Chinese students were ordered to depart on short notice. The counteractions in turn elicited equally angry responses from Beijing. The Chinese viewed their own unilateral action as justifiable on account of the political situation in China but considered the reciprocal action taken by their Communist counterparts as punitive and provacative.

Reactivation of the Foreign Exchange Programs

With the reopening of institutions of higher learning in the early 1970s and the concurrent drive for diplomatic recognition and

international contact, initiatives were taken to revive student exchanges. Commencing on a modest scale, the sending of Chinese students, researchers, and technicians abroad for study and advanced training have now blossomed into a major campaign. At the same time, as available facilities and capabilities allow, Beijing is accepting, in steadily increasing numbers, foreign students, teachers, and technicians for study, research, and instruction in China.

The initiative for a resumption of student exchanges rested originally, in the post-Cultural Revolution period, with Western countries desirous of sending students to China, but the trend turned sharply in late 1972, when the PRC began to press--at times with some urgency--for the consummation of exchange arrangements proposed earlier by several Western countries. As a result, programs allowing the Chinese to send upward of 20 students annually were arranged by the PRC with Canada, Australia and a number of West European countries. In most cases, these arrangements were for the Chinese sent abroad to study host country languages. During the same period, the Japanese agreed to take a few Chinese for the study of the Japanese language in Japan. In response, the Chinese accepted a small number of students from those countries for study in China, mostly for the study of Chinese language, literature, and history. All of these arrangements, however, were without formally negotiated agreements.

Exchanges with countries in Eastern Europe with which the PRC remained on good terms--Albania, Romania, and Yugoslavia--and with Third World countries were also reactivated. Though little information is available, students from North Korea, Vietnam, Cambodia and Laos were apparently also present in large numbers. Exchanges with Albania and Vietnam, however, were suspended in 1978, as relations between China and those countries degenerated.

The fundamental aim of the PRC in developing scholarly and technical exchange programs with countries of the Western World and Japan is to acquire from them advanced skills and knowledge essential to the realization of China's modernization effort. Its objective in promoting exchanges with Third World countries is to learn from them host-country languages and cultures and to provide students from those countries opportunity for university and post-graduate training in China.

In the process of expanding student exchanges, Beijing has departed from two earlier held basic principles of operation in dealing with exchange matters. In the first place, it has dropped its earlier policy of opposing the development of academic and technical exchanges with Western countries and Japan on the basis of formal

agreements; secondly, it has departed from a policy of strict control over and a limitation of contacts with the local populace by Chinese students sent abroad.

Prior to January 1978, several Western countries and Japan had sought to negotiate exchange agreements with the PRC but efforts met with no success, some initiatives even without response. In January 1978, a scientific and technical agreement and a two-year cultural cooperation agreement between China and France was signed in Beijing during the visit of French Premier Raymond Barre. These were the first agreements signed with a Western country calling for exchanges. Following these, agreements were signed, in fairly rapid succession, with Italy, the Federal Republic of Germany, the United Kingdom, Sweden, the United States, and a few other countries. Protocols detailing exchanges were negotiated with the first four in the autumn of 1979, during the visit to those countries of Premier Hua Guofeng. A cultural cooperation agreement was also negotiated with Japan during the visit to China in December 1979 of Japanese Premier Masayoshi Ohira.

Prior to this series of events, exchange agreements, mostly in the form of provisions in cultural cooperation agreements, as noted above, had existed only with communist countries and a few Third World countries, all of which apparently expired during the period of the Cultural Revolution when implementing protocols failed to be negotiated. At present, reactivated exchange agreements with communist countries appear to be in force with only North Korea, Romania, Yugoslavia, Bulgaria, and Hungary.

With the large number of Chinese students going abroad at present,[74] it is no longer feasible to place them in a few closely watched facilities in most countries or for the Chinese embassies there to maintain close surveillance over them. As a consequence, the Chinese have not only allowed but encouraged their students to live dispersed, often with private families of the host countries, and to establish local contacts. They have even permitted advanced students to accept academic employment while abroad where this is possible.

As Chinese students abroad are given such liberties and opportunities, new problems of adjustment crop up. In some countries local organizations have been established to attend to these problems. For instance, a Fraternal Society of Overseas Chinese Students in Japan was formed under Japanese sponsorship in November 1979 on the urging of Itoko Kaya, wife of a former president of Tokyo University, and Tenkoko Sonada, wife of a former foreign minister, to look after the interests of Chinese students in Japan.[75] Because

of the former roles of their husbands, both women were acquainted with the problems Chinese students were experiencing and recognized the need to attend to them as the Chinese student population in Japan began to grow in numbers.

Administration of Exchanges

International exchanges of the PRC, academic and technical as well as others, are conducted by China on three levels: 1) a central government-to-government level; 2) an intermediate government level, for instance, province or municipality to state, in the case of dealings with the United States; and 3) on what the PRC views as a private or peoples-to-peoples level.

In the case of exchanges on the government-to-government level, these are negotiated and supervised, on the Chinese side, by organs subordinate to or associated with the executive organ of the state, the State Council, dealing directly with foreign government agencies and, to a limited degree, with foreign government facilitated organizations. The function of the government at this level is largely the negotiation of exchange agreements; implementation is carried out by state agencies or organs in the mass sector.

In the case of exchanges on the intermediate governmental level, these are negotiated and administered, on the Chinese side, by provincial-level organs, including at present municipal organs, both of municipalities subordinate to the central government and municipalities subordinate to the provinces. These bodies deal with governmental organs in foreign countries below central government level. This level of exchanges has developed only in the past two years. Illustrations of such exchanges are those which will result from the Anhui Province-State of Maryland linkage and the Hupei-Ohio ties, and those resulting from the various sister-city linkages that have developed, such as the Nanjing-St. Louis[76] and the 13 sister city linkages now in existence between China and Japan.[77] In the arrangements for these ties, cultural exchanges, including academic, play a role.

In respect to the peoples-to-peoples level exchanges, these are negotiated and administered by Chinese mass organizations in what Beijing considers the private sector, which deal with private organizations abroad. While regarded as being in the private sector, the Chinese organs involved are all under the control of and financed by the central government or the provincial and municipal governments. The organization in this sector which has the broadest

scope and responsibility is the Chinese People's Association for Friendship with Foreign Countries but those with greatest relevance to scholarly and technical exchanges include an array of educational, scientific, and technical institutes, societies, and academies, such as the Chinese People's Institute of Foreign Affairs, the China Scientific and Technical Association, the China Educational Association, the Chinese academies of agriculture and forestry, and other similar bodies. Student and teacher exchanges, using the term in the broadest sense, have also been arranged by the Chinese People's Association for Friendship with Foreign Countries with specialized exchange organizations abroad or with various binational organizations abroad, such as the Japan-China Friendship Association and the United States-China Friendship Association. Arrangements between private citizens abroad, mostly by Overseas Chinese, with Chinese officials have also resulted in the placement of foreign students in China and the sponsorship abroad of Chinese students.

Student exchanges in the private category include, among others, those arranged by the University of Nebraska and Guangdong University and by the University of California with Beijing University.

The most productive and broadest category of exchanges in the private sector over a period of time have probably been those conducted since 1956 by the Chinese People's Association of Friendship with Foreign Countries and the Japan-China Cultural Exchange Association.

In addition to the liberalizing of controls over students sent abroad, the PRC has agreed to the incorporation of a few new features in the latest spate of exchange agreements consummated in the autumn of 1979. In an agreement between the PRC and Britain, signed during Hua Guofeng's visit to London, was a clause providing for the mutual granting of scholarships by the receiving country to students and advanced researchers of the sending country.[78] A similar provision was included in protocol for scientific cooperation and cultural exchange for 1980-81 signed in Rome by a mixed PRC-Italian commission.[79] The British agreement also specified the intent of the two countries to promote direct contacts and exchanges between universities and other institutions of the two countries, and contained a provision for the encouragement and facilitation of visits by scholars of the corresponding country on a self-paying basis.

Developments of the past year clearly indicate a great augmentation of Chinese students and researchers going abroad for studies and training. Meanwhile, the number of foreign students and researchers admitted to China will continue for a number of years to be limited by available physical facilities and teaching capabilities. The Chinese will, however, continue to give special attention to the expansion of such facilities and the improvement of their instructional capabilities. At the same time, joint research projects are likely to increase in China and in the correspondent countries.

FOOTNOTES

[1]Following the visit to Romania and Yugoslavia in August 1978 by a PRC delegation, headed by CCP Party Chairman and Premier Hua Guofeng, during which some of China's top leaders were able for the first time to observe the extent of China's lag behind even these countries in science, technology, and general living standards, the promotional theme for modernization was dramatically changed from calling for the achievement of the objectives by the year 2000 to demanding that the goals be accomplished sooner. People's Daily, in its National Day editorial, October 1, 1978, said that "...now the point is to do it faster, striving to reach this great objective more quickly." Red Flag, also in its October 1 editorial said, "At present, what is important is no longer a question of whether we can build our country into a modern, powerful socialist country before the end of the century but the necessity to realize such a task more rapidly and to realize the modernization at a relatively higher degree in accordance with the original ideas." With the readjustment of targets, however, the question of the ultimate target date has been muted.

[2]The interim program, while actually implemented in 1978, is referred to by the PRC as covering the ten-year period 1976-1985, which coincides with the Fifth (1976-1980) and the Sixth (1981-1985) Five Year plans.

[3]Over the years, the Chinese Communists have issued and refined their lists, or listings, of categories of negative elements in the state. Initially, the list contained five negative categories--(1) landowners, (2) rich farmers, (3) counterrevolutionaries, (4) bad elements (anti-social elements, such as thieves, embezzlers, murderers and rapists), and (5) rightist elements. Later the fifth category was periodically broken down, resulting eventually in its replacement by the following, which were added to the first four: (5) incorrigible capitalists, (6) rebels from their own ranks, (7) enemy agents, (8) reactionary capitalists, and (9) reactionary intellectuals. Interestingly, according to VOA's Hsu Yuanyo, traditionally, students in China have been referred to as the "Ninth Category" (jiu lao qiu or simply (jiu qiu), following soldiers, who were the "Eighth Category" (ba qiu).

[4]Fang Yi, a member of the Political Bureau and a Vice Premier, is the Minister in charge of the State Scientific and Technological Commission, the highest organ of state in the fields of science and technology, and concurrently a Vice President of the Chinese Academy of Sciences. Though presently concerned with science and technology, he does not appear to have any specialized training in those fields, and his bureaucratic rise has been primarily through roles in finance and general economics. A veteran of the Long March, Fang had been, prior to his association with the CCP, editor of the Commercial Press in Shanghai and has at least some knowledge of Japanese, German, English and Russian.

[5]Beijing, Xinhua, March 21, 1978.

[6]Beijing, Xinhua, March 28, 1978.

[7]According to a Kyodo News Agency report, Tokyo, September 27, 1978, in a discussion with a group of Japanese scientists, Zhou Peiyuan referred to the 800,000 as a projected figure of needed scientists and engineers, and said that the attainment of that number would represent an increase from the present 60,000 available. Zhou, a Vice President of the Chinese Academy of Sciences, Acting Chairman of the Scientific and Technical Association, and President of Beijing University, studied physics at the California Institute of Technology in the 1920s and worked under US military auspices in the 1940s.

[8]At the time of writing, Xinhua and Red Flag had carried only the official abridged text of Fang's speech. Drafts of the outline plan for the 1978 to 1985 period were distributed to the conference delegates but not released by Xinhua.

[9]A national conference on advanced laser techniques, attended by 120 researchers, was held in Wuhan between June 6 and 15, 1978, according to AFP, Beijing, June 23, 1978, quoting People's Daily of June 22, 1978.

[10]Hefei, Anhui Provincial Service broadcast, September 20, 1978.

[11]Beijing, Xinhua, March 28, 1978. See Beijing, Xinhua, March 28, 1978. One aspect of American life that impressed members of a PRC delegation of journalists that toured the country in 1978 was the fact that "Though the scientific and technological level of this country is of first class in the world, they do not refuse to learn from foreign countries." See article by Wang Jo-shui, "A Glance of the United States," People's Daily, October 17, 1978, a translation of which is to be found in JPRS Number 72423, December 13, 1978, with the referenced passage on page 27.

[12]"Commentator" article in an undated Jiaoyu Yanjiu, carried in Guangming Ribao, October 20, 1979.

[13]Ibid.

[14]Li Qi, Vice Minister of Education, in an interview with Xinhua correspondents--see Beijing, Xinhua, July 19, 1978. Despite past claims of progress, Li Qi complained that illiteracy remains in "fair amount," mainly among the peasants.

[15]Ibid.

[16]Tokyo, Kyodo News Agency, September 27, 1978.

[17]A Guangming Ribao editorial, July 13, 1978, stated that the number of scientists and technicians in the country not making use of what they have learned "is equivalent to three to four times the total of graduates in one year from several hundred existing institutions of higher learning" in the PRC. The need for greater attention to the proper placement of trained personnel has been the subject of comment by leaders and by other journals as well.

[18]Beijing, Xinhua Domestic Service, September 19, 1978.

[19]Ibid.

[20]Beijing Review, No. 42, October 19, 1979, p. 6.

[21]Ibid.

[22]Beijing, Xinhua Domestic Service, September 19, 1978. The additional facilities would provide space for 150,000 college,370,000 vocational, 900,000 middle school, and 810,000 primary school students.

[23]See Robert Leestma, "Forward," in Robert D. Barendsen, editor, The 1978 National College Entrance Examination in the People's Republic of China (Washington: US Department of Health, Education, and Welfare; Office of Education, July 1979), p. iii. In this connection, see also Robert D. Barendsen, The Educational Revolution in China (Washington: US Government Printing Office, 1973) and Dale Bratton, "University Admissions Policies in China, 1970-1978," Asian Survey, Volume XIX, Number 10, October 1979, pp. 1008-1022.

[24]Beijing, Xinhua, June 13, 1978.

[25]Guangming Ribao, May 23, 1979.

[26]A term used by Minister of Education, Jiang Nanxiang, in a speech on educational work in May 1979--Beijing Radio, Domestic Service, July 17, 1979.

[27]Jay Mathews, The Washington Post, June 23, 1978.

[28]Robert Leestma, op. cit., p. iii.

[29]Beijing Xinhua, September 16, 1979; Beijing Review, Number 41, October 12, 1979, p. 6.

[30]Beijing, Xinhua, Domestic Service, August 2, 1979.

[31]Beijing, Xinhua, June 19, 1978; Beijing, Xinhua, September 16, 1979.

[32]Beijing, Xinhua, September 23, 1979.

[33]Beijing, Xinhua, September 23, 1979. The Xinhua release provided the following data relating to educational institutions and enrollment in 1979 (or as otherwise stated) and as compared to similar figures for 1949 (or, in one case, 1950):

Level	1979		1949	
	Institutions	Students	Institutions	Students
Kindergarten	164,000	7,870,000	(1950) 1,800	140,000
Primary Schools	900,000	146,000,000	340,000	24,000,000
Middle Schools	160,000	65,000,000	4,000	1,000,000+
Secondary and Vocational	2,000+	880,000	1,000	220,000
University and College	598	850,000	200	117,000
Factory-Run and Spare-Time		500,000		
Spare-Time Secondary Schools		68,000,000		
Graduate Students (1978)		8,000		

The same Xinhua item also reported that since 1949, PRC had graduated a total of 2,940,000 students from institutions of higher learning. Teaching staffs at these institutions were reported in the following magnitude:

Level	1979	1949
Primary Schools	5,220,000	836,000
Middle Schools	3,280,000	83,000
Institutions of Higher Learning	260,000	16,000

Xinhua stated that 94 percent of school-aged children are presently enrolled in schools. The figure of 146,000,000 students enrolled in primary schools is the same figure that Beijing, Xinhua, had used on July 28, 1978, for 1978 enrollment.

[34]Wen Yinggan in Nanfang Ribao, Canton, August 1, 1979.

[35]Ibid.

[36]Vice Minister Li Qi in an interview with Xinhua correspondents--Beijing, Xinhua, July 19, 1978.

[37]Beijing, Xinhua, July 18, 1978. The previous day, Xinhua had reported that a forum held in Wuhan had taken a decision to compile within one year more than 100 textbooks on basic courses in language, philosophy, history, political economy and education--see Beijing, Xinhua, July 17, 1978.

[38]Peking Review, Number 39, September 29, 1978, p. 26.

[39]Liao Chengzhi, "Be Resolute to Push Foreign Language Education Forward," Guangming Ribao, September 27, 1978. See also Lu Shuxiang, "Two Pressing Problems in Language Teaching," People's Daily, March 16, 1978, and a Xinhua article, September 30, 1978, dealing with the question of improving foreign language teaching in China. The Gang of Four is accused of having argued that "we can make revolution without knowing A, B, C"--Beijing, Xinhua, September 28, 1978.

[40]Liao Chengzhi, op. cit. While Liao spoke of the need of 50,000 foreign language instructors, Xinhua reported December 5, 1979, that China has 222,273 persons classified as skilled in 56 languages. 33,330 of these, however, were said to be improperly employed. This resource, however, does not necessarily negate Liao's claim.

[41]Hong Kong, Ta Kung Pao, English Edition, November 11, 1979.

[42]Writing about Washington, D.C., Wang Jo-shui, a member of the PRC journalist delegation that visited the United States in 1978, said in his trip report, "Journalist Views Aspect of Life in America," that "in this country, scientists are respected" (or "esteemed"). See JPRS, Number 72423, December 13, 1978, p. 22.

[43]Beijing, Xinhua, March 21, 1978.

[44]Ibid.

[45]Ibid.

[46]Shanghai, Wen Hui Bao, "commentator" article "Bring the Role of Intellectuals into Full Play," carried by Radio Shanghai in its Domestic Service, November 12, 1979--FBIS, Daily Report, Number 222, November 15, 1979, p. 11.

[47]Zhongguo Qingnian Bao, August 23, 1979--JPRS, Number 74450, October 25, 1979, pp. 38-39.

[48]Beijing, Xinhua, June 14, 1978.

[49]Beijing, Xinhua, November 24, 1979. Teachers' salaries, especially in secondary schools, continue to be generally lower than in other comparative fields of activity--Guangming Ribao, September 19, 1979.

[50]Beijing, Xinhua, March 6, 1978.

[51]Beijing, Xinhua, Domestic Service, July 2, 1978. An indication that an "emancipation of the mind" is in fact taking place is a report carried by the Xinhua Domestic Service on December 3, 1979, to the effect that an All-China Society for the Study of Modern Foreign Philosophy had been formed in Taiyuan, which had convened a national meeting at which papers covering Western, Soviet and East European philosophies had been discussed.

[52]Gan Bai, Party Secretary in the Institute of Physics of the Chinese Academy of Sciences, in an article, "Race Against Time to Realize the Four Modernizations," in People's Daily, March 15, 1978. Gan said that Zhou had laid down this regulation on instruction from Chairman Mao in 1956.

[53]Deng Xiaoping, in his speech to the National Science Conference, Beijing, Xinhua, March 21, 1978. Deng added that "It is still better if even more time is available for this purpose."

[54]Gan Bai, op. cit.

[55]Deng speech, Beijing, Xinhua, March 21, 1978.

[56]Guangming Ribao, July 13, 1978.

[57]Chi Ti, "General Task for the New Period: Industrial Modernization," Peking Review, Number 26, June 30, 1978, p. 7.

[58]Deng, op. cit.

[59]Li Chang, a vice president of the Chinese Academy of Sciences, in a speech at the National Science Conference. See Guangming Ribao, April 2, 1978.

[60]Beijing, Xinhua, Domestic Service, September 25, 1978. More recently, 13 professors and associate professors were appointed president or vice president of ten institutions of higher learning in Sichuan Province--Guangming Ribao, August 17, 1979 (see JPRS, Number 74368, p. 56). In addition to the granting of greater responsibility, other morale raising measures have been taken, including the restoration of titles, the promotion of deserving scientists and technical personnel, and the granting of awards of merit. A few scientists have also been admitted to CCP membership,

an action that considerably increases their prestige and influence. See Fang Yi and Li Chang speeches at the national Science Conference, Beijing, Xinhua, March 28, and Guangming Ribao, April 2, 1978, respectively; and Beijing, Xinhua, August 31, 1978.

[61]Hua speech at the National Science Conference, 1978. See Beijing, Xinhua, March 25, 1978.

[62]Guangming Ribao, June 24, 1978. Implementation of this policy is reflected in the formation of the China Science and Technology Popularization Creative Arts Association and its recent national science popularization work exhibition in Beijing--Beijing, Xinhua, Domestic Service, November 20, 1979.

[63]Hua Guofeng, speech at the National Conference on Finance and Trade, 1978. See Beijing, Xinhua, July 11, 1978.

[64]At the 1978 national science conference, Deng Xiaoping said, "Independence does not mean shutting the door on the world, nor does self-reliance mean blind opposition to everything foreign," --see Beijing, Xinhua, March 21, 1978. Deng's comments are in line with long-standing interpretations of self-reliance by Zhou En-lai and others, and as expounded by Wang Rongsheng at the UNESCO meeting in Geneva in July 1972, when he said:

> "Self-reliance means this: Rely mainly on the strength of each country's own people, give full play to their talents, gradually eliminate the forces and influences of imperialism, colonialism, and neo-colonialism, and exploit all available resources at home systematically and in a planned way; make every effort to accumulate necessary funds for development through internal resources; take effective measures to train the country's own technical and managerial personnel, in a way suited to local conditions; gradually change the 'single-product economy' resulting from a long colonial rule; lift the country from dependence upon and subordination to imperialism, and establish an independent and relatively comprehensive economic system.... Independence and self-reliance do not mean seclusion and self-sufficiency. Self-reliance excludes neither the development of international economic and trade relations on the principle of equality and mutual benefit nor the mutual support and assistance given on the same basis." Geneva, Xinhua, July 6, 1972.

[65]Illustrative of press items are an article by Guo Jicu in Guangming Ribao, April 23, 1978, denouncing an earlier attack against foreign technology, and a Xinhua commentary, entitled "Valiantly Plan the Introduction [of foreign technology] to Accelerate the Pace of Development," carried by Xinhua in its Domestic Service, September 16, 1978.

[66]Tsai Mei-piao, "Distinguish Between the Right and Wrong Line and Let a Hundred Schools of Thought Contend," Guangming Daily, March 11, 1978.

[67]Specific student exchange agreements existed with only East Germany, Poland, and the Soviet Union, but cultural agreements and scientific and technological cooperation agreements, which the PRC had negotiated with each of the European communist states, generally included provisions for academic and technological exchanges and for scientific cooperation.

[68]Theodore H. E. Chen, "Student Exchanges in Communist China," in the proceedings of the First Sino-American Conference on Mainland China, December 11-19, 1970.

[69]Ibid.

[70]Emmanuel John Hevi, An African Student in China (New York: Frederick A. Praeger, 1963), pp. 119-136.

[71]Ho Hsiang-ning, "Rising Patriotism of Overseas Chinese," speech to the National People's Congress, July 11, 1957.

[72]People's Daily, July 12, 1960.

[73]People's Daily, April 15, 1960; China News Analysis, Number 362, March 3, 1961; Union Research Institute, Hong Kong, Communist China, Volume II, 1961, page 161.

[74]Xinhua, Beijing, announced on November 9, 1979, that there were 2,230 Chinese students studying in 33 countries, of which some 200 were in Britain, 200 each in France and the Federal Republic of Germany, and 100 in Japan, and the largest contingent of approximately 500 in the United States. These figures, however, reflect in at least some cases the situation obtaining well before the November 9 date. In the case of Japan, for instance, Kyodo reported on November 1, 1979, that there were as of October 1979, 150 Chinese students in Japan and that 386 more were scheduled to arrive in Japan in April 1980. Following the Ohira-Hua talks in December, Kyodo reported (on Decerber 6, 1979) that China plans to send 450 students to Japan in fiscal 1979, which ends in March 1980, and has requested Japan to increase the number of students it is willing to receive to 700. A Paris, AFP report, October 18, 1979, reported that Giscard d'Estaing and Hua Guofeng had agreed to increase Chinese students in France to 200 per year, while the Sino-German protocol concluded during Hua's visit to Bonn called for the addition of 300 Chinese students and researchers in German universities in 1980--Bonn, Presse- und Informationsamt der Bundesregierung: Bulletin, Nr. 129/S., October 25, 1979, p. 1199. Since January 1979 more than 1,400 Chinese scholars and students have come to the United States. They are attending some 160

institutions, where most are studying physical or applied science in non-degree programs that are expected to extend for a two-year period. The PRC Government has selected and is paying for some 800 of this group. The remainder are privately financed, most often by relatives living in the US. The Chinese have asked, and ths US has agreed, to their sending an additional 1,000 new scholars and students to the United States beginning with the fall term. Meanwhile, some 60 American graduate students and scholars have gone to China since February 1979 under the US Government program. An additional 60 are expected to go to China this fall, with the understanding that any Americans already in the PRC who wish to continue their studies for an additional period of time will be permitted to do so.

[75]Tokyo, Kyodo, November 1, 1979.

[76]Beijing, Xinhua, November 2, 1979.

[77]Beijing, Xinhua, December 4, 1979, reported that there were, as of that date, thirteen cities in the China-Japan link up.

[78]Beijing, Xinhua, November 1, 1979.

[79]Rome, ANSA, October 20, 1979.